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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/597,205

07/17/2007

Carsten Heldberg

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01/21/2011

LOWE, HAUPTMAN, HAM & BERNER, LLP (ITW)

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ALEXANDRIA, VA 22314

EXAMINER

BRADFORD, JONATHAN

ART UNIT

PAPER NUMBER

3744

MAIL DATE

DELIVERY MODE

01/21/2011

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/597,205	Applicant(s) HELDBERG ET AL.	
	Examiner JONATHAN BRADFORD	Art Unit 3744	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 December 2010.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 11-30 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 17, 18 and 20 is/are allowed.
- 6) ☒ Claim(s) 11-16, 19, and 21-30 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. **Claims 11, 15-16, and 19 are rejected** under 35 U.S.C. 103(a) as being unpatentable over Saur (US 4,674,679) in view of Henschel (DE 4231649).

As to claim 11, Saur teaches a thermostat valve arrangement for a cooling circuit of an internal combustion engine (col. 1, lines 6-8), the arrangement comprising: a housing having a sealing valve seat 25 and formed from an upper valve housing 1 and a lower housing 23; a guide component that is a section supported by the housing and consisting of a notch holding a spring 12 to guide the opening and closing of the valve as well having a hollow cylindrical section 27 (see annotated figures); a main valve member 6 moveably engaged with the valve seat 25; a bypass valve member 7 spaced from the main valve member 6 in an axial direction and movably engaged with the hollow cylindrical section 27 of the guide component; an expansion element comprising wax within the body 17 (col. 3, lines 19-20) and a piston element 18 having a first section and a second section, the first section cooperable with an abutment fixed to the housing (col. 4, lines 1-5) and the second section cooperable with the main valve member 6 and the bypass valve member 7 (col. 4, lines 6-13) in an axial direction of the main valve member such that the valves are opened and closed to produce the cooling

Art Unit: 3744

circuit of the engine; and a valve spring 12 that is between the main valve member 6 and the guide component and surrounds the expansion element and the entire hollow cylindrical section of the guide component (see annotated figures), wherein when the main valve member 6 is closed, the main valve member is biased by the valve spring 12 to be directly engaged with the main valve seat 25 and the bypass member 7 is disengaged from the hollow cylindrical section of the guide component (as shown in Fig. 1), and when the main valve member 6 is open, the main valve member 6 is pressed by an expansion of the expansion element and disengaged from the main valve seat 25 and the bypass valve member 7 is pressed by the expansion element into the hollow cylindrical section of the guide component (col. 4, lines 1-13).

Saur does not explicitly teach that the main valve seat 25 is a conical valve seat. However, Henschel teaches a conical valve seat for a valve member (see annotated figures.) Since the main valve member 6 of Saur is of a conical shape, it would have been obvious to a person having ordinary skill in the art, at the time of the invention, to make the main valve seat 25 also be a conical shape similar to the valve seat of Henschel, because it would result in a larger sealing surface area between the valve 6 and the seat 25, resulting in a more effective seal that would be resistant to leakage.

As to claim 15, Saur, as modified, teaches a main valve member 6 which is connected to the bypass valve member 7 by parallel projections which extend axially (see annotated figures).

As to claim 16, Saur, as modified, teaches a second plate facing the bypass valve 7 that is connected to the bypass valve 7 via the projections and forms an integral

component consisting of the second plate, the projections, and the bypass valve member 7 (Saur, Fig. 1).

As to claim 19, Saur, as modified, does not explicitly teach that the guide component comprises a radial flange projecting outwardly from the expansion element and on which the valve spring is directly supported. However, it would have been an obvious design choice to modify the Saur reference by having a radial flange to support the spring, since the applicant has not disclosed that having a radial flange to support the spring solves any stated problem or is for any particular purpose, and it appears that the valve would perform equally well with or without a radial flange.

3. **Claims 12-14 and 21 are rejected** under 35 U.S.C. 103(a) as being unpatentable over Saur in view of Henschel as applied to claim 11 above, and further in view of Griffin (US 3,049,039).

As to claim 12, Saur, as modified, teaches a main valve member 6 formed from a first plate and a second plate coaxially connected to the first plate (see annotated figures). Saur, as modified, does not explicitly teach a sealing ring sandwiched between the plates that is directly engageable with the main conical sealing valve seat. However, Griffin teaches using a sealing ring 60 sandwiched between two coaxially connected plates 40 and 46 to seal against conical valve seat. It would have been obvious to a person having ordinary skill in the art, at the time of the invention, to further modify the valve member 6 of Saur to include a sealing ring sandwiched between the coaxially connected plates as taught by Griffin, because it would prevent the valve from being

Art Unit: 3744

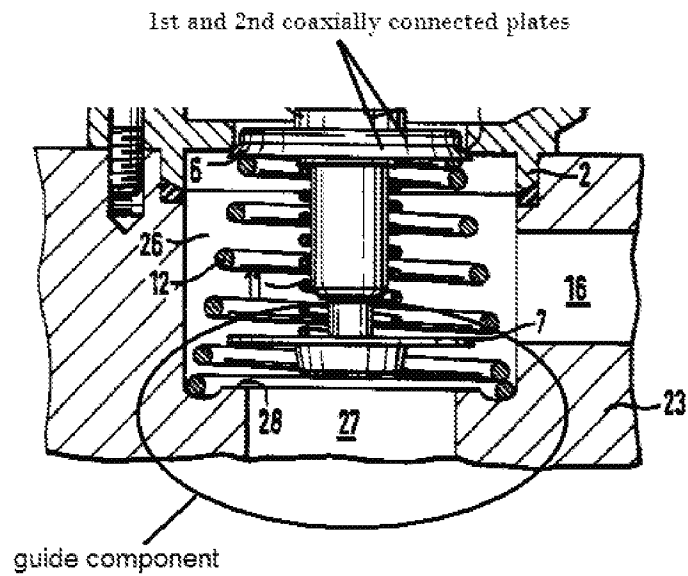
damaged by sudden impacts while ensuring a good seal even on a dry valve seat (Griffin, col. 1, lines 54-58).

As to claims 13 and 21, Saur, as modified, does not explicitly state that the first and second plates are connected in a snap connection using recesses and pins passing through the sealing ring. Saur, as modified, meets the limitations of claim 13 except Saur shows plates that are formed together rather than joined with a snap connection. However, because these connections were art-recognized equivalents at the time of the invention in applications where it is immaterial how a valve is constructed, so long as it acts in one piece, one of ordinary skill would have found it obvious to substitute a snap connection for the solid connection shown by Saur. Further, the applicant also states in the disclosure that the plates will perform equivalently if welded together (page 6, lines 1-4), thus the solid connection of Saur is considered to perform equivalently to that of a snap connection.

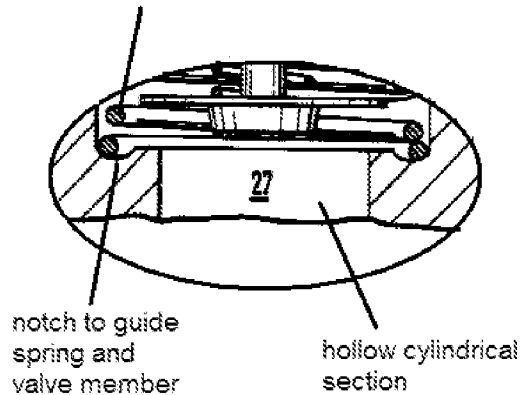
As to claim 14, Saur, as modified, teaches an expansion element with a shaft 18 at the first section which faces the main valve seat, while a flanged second section is received in a complementary recess of the first plate (see annotated figures.)

Annotated Figures

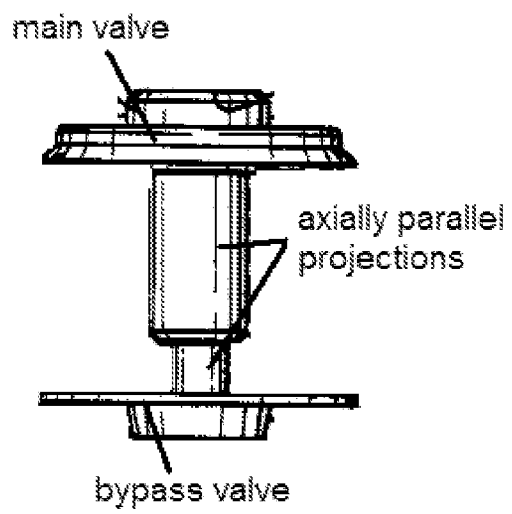
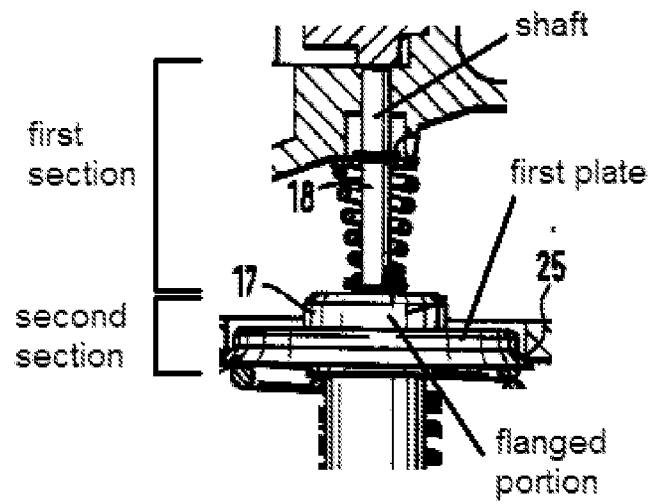
Saur



spring surrounding notch and cylindrical
section which make up guide component



Art Unit: 3744



4. **Claims 22-30 are rejected** under 35 U.S.C. 103(a) as being unpatentable over Henschel in view of Freismuth (US 2,996,254).

As to claim 22, Henschel discloses a three way thermostat valve arrangement for the cooling circuit of an engine having: a housing formed by the upper portion 1 and the lower portion 2 and having a conical sealing seat; a guide component 5 axially supported in the housing and having a hollow cylindrical section; a main valve member engageable with the sealing seat; a bypass valve member 22 which is spaced from the main valve member in an axial direction and is movably engaged with the hollow cylindrical section of the guide component; an expansion element 3 with a first section 18 and a second section, where the first section 18 cooperates with an abutment 19 fixed to the housing and the second section cooperates with the main valve member and the bypass valve member so that both the main valve and the bypass valve 22 can either be selectively closed or opened in order to direct coolant to either a radiator or a bypass (Fig. 3); and a valve spring 6 between the main valve and the guide component 5 (for elements not specifically noted in the rejection, please refer to the annotated figure); wherein when the main valve is closed, the main valve member is biased by the valve spring 6 to be engaged with the main valve seat while the bypass member is disengaged from the hollow cylindrical section, and when the main valve is open, the main valve member is pressed by the expansion element and disengaged from the main seat while the bypass is pressed into the hollow cylindrical section (Figs. 2 and 3).

Henschel does not explicitly teach at least one axially parallel guide groove which extends into the hollow cylindrical section and includes a section facing the bypass valve member, or that the bypass valve member comprises a radial lug introduced into the guide groove in a bayonet connection. However, Freismuth teaches the connection of a thermostatic valve using guiding grooves 55 and 57, lugs 50, and a bayonet connection 48. It would have been obvious to a person having ordinary skill in the art, at the time of the invention, to use a bayonet connection such as the connection taught by Freismuth to connect the guide component 5 and valve unit 4 of Henschel, because it would provide for convenient assembly and prevent unintentional disassembly of the valve (Freismuth, col. 2, lines 64-65.)

As to claims 23-24, Henschel, as modified, teaches a sealing ring 13 on the main valve member which is brought into engagement with the conical sealing surface of the main valve seat. Henschel does not explicitly teach that the main valve member comprises two coaxial plates that may be connected to one another with a snap connection and having the sealing ring 13 sandwiched in between. Henschel, as modified, meets the limitations of claim 13 except Henschel shows a one piece main valve member rather than two plates joined with a snap connection with a sealing ring sandwiched therebetween. However, because these elements were art-recognized equivalents at the time of the invention in applications where it is immaterial how a valve is constructed, so long as it acts in one piece, one of ordinary skill would have found it obvious to substitute two plates connected with a snap connection for the solid piece shown by Henschel. Further, the applicant also states in the disclosure that the plates

Art Unit: 3744

will perform equivalently if welded together (page 6, lines 1-4), thus the solid member and sealing ring 13 of Henschel is considered to perform equivalently to that of a snap connection and sandwiched ring as claimed.

As to claim 25, Henschel, as modified, teaches an expansion element comprising a shaft at the first section facing the main valve seat and a radial flange at the second section received in a complementary recess of the valve member which faces the flange (see annotated figure).

As to claim 26, Henschel, as modified, teaches connecting the main valve member with the bypass valve member with axially parallel projections (shown in annotated figures).

As to claim 27, Henschel, as modified, includes a valve member equivalent to first and second plates as stated in the rejection of claims 23-24 above. Further, the lower portion of the main valve member (analogous to a "second plate") is connected with the bypass valve member via the projections and the elements form an integral component (see annotated figures).

As to claim 28, Henschel, as modified, teaches a plurality of axially parallel arms in the form of engaging bars 24 that are spaced apart from one another in the peripheral direction. Henschel, as modified, does not explicitly teach that the guide grooves extend from the hollow cylindrical space to the plurality of arms 24. However, to fully close the main valve, the bypass member moves all the way to the end of the engaging bars 24, as shown in Fig. 2. When connecting the guide component 5 and valve unit 4 of Henschel with a bayonet connection as described in the rejection of claim 22 above, it

Art Unit: 3744

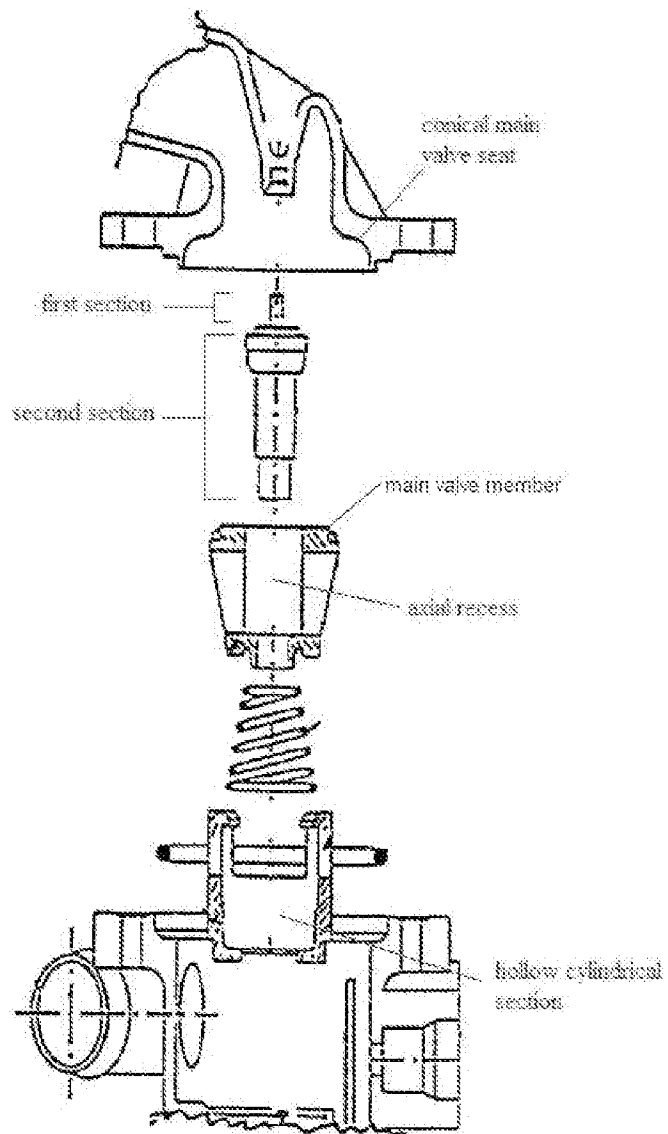
would have been obvious to a person having ordinary skill in the art, at the time of the invention, to include guide grooves that extend to the engaging bars 24, because it would allow the valve to fully open and close within the guide component.

As to claim 29, Henschel, as modified, teaches a guide component 5 with an internal radial flange on which the valve spring 6 is directly supported (shown in Figs. 2 and 3 of Henschel). The flange projects outwardly from the direction of the expansion element 3 at the center of the valve and at the lower end of the guide component 5.

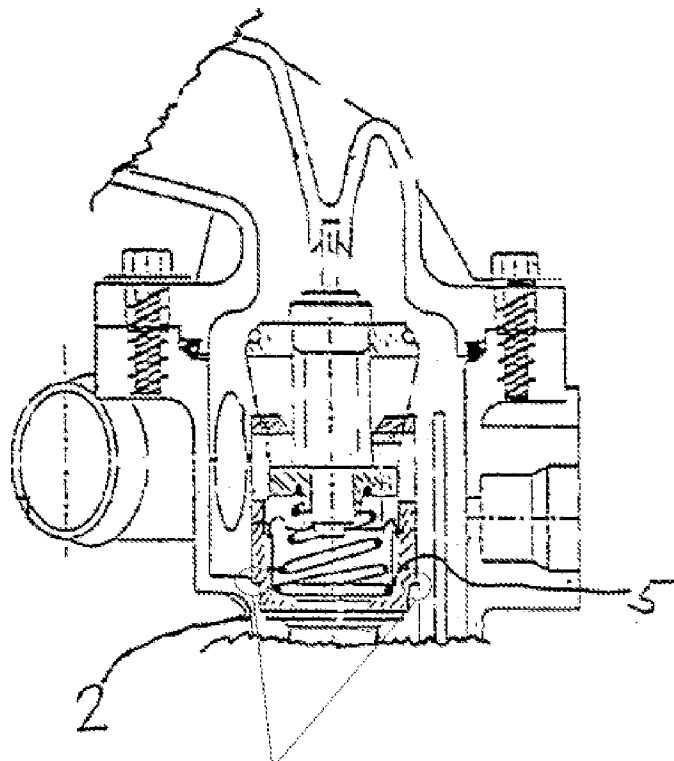
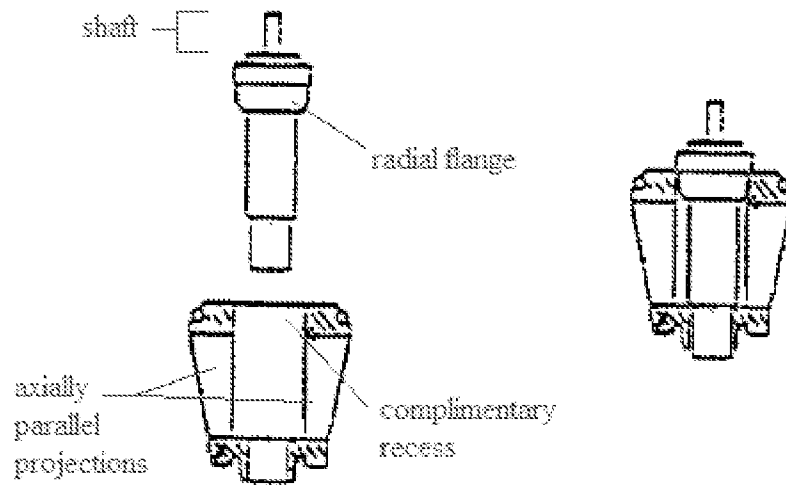
As to claim 30, Henschel teaches a guide component 5 that has an annular rib which fits securely into an annular groove of the lower portion 2 that supports the guide component (see annotated figures).

Annotated Figures (cont.)

Henschel



Art Unit: 3744



Annular rib of guide component 5 fits securely into an annular groove of the lower portion 2 which supports the guide component.

Allowable Subject Matter

5. **Claims 17, 18, and 20 are allowed.**

Response to Arguments

6. Applicant's arguments, see page 9, filed 11/19/2010, with respect to the rejection of claims 12 and 27 under 35 U.S.C. 112 (2) have been fully considered and are persuasive. The rejection of claims 12 and 27 has been withdrawn.

7. Applicant's arguments, see pages 9-10, filed 11/19/2010, with respect to the rejection of claim 11 under 35 U.S.C. 103(a) have been fully considered but they are not persuasive.

The applicant argues that the applied art fails to disclose or suggest the amended feature of a valve spring that surrounds the entire hollow cylindrical section of the guide component. The examiner respectfully disagrees. Fig. 1 of Saur shows a valve spring 12 which surrounds the entire circumference of the hollow cylindrical section 27. Therefore the spring is considered to meet the limitation as it surrounds the circumference of the cylindrical section in its entirety.

8. Applicant's arguments with respect to claim 12 have been considered but are moot in view of the new ground(s) of rejection.

9. Applicant's arguments, see page 10, filed 11/19/2010, with respect to the rejection of claim 19 under 35 U.S.C. 103(a) have been fully considered but they are not persuasive.

The applicant argues that the design choice rationale is improper. The examiner respectfully disagrees. The modified valve of Saur includes a section of the valve housing which supports the valve spring 12. There is no particular reasoning given in the applicant's disclosure as to any unexpected advantage that will result from the provision of a radial flange projecting outwardly to support a valve spring. Therefore, it is considered an obvious design choice to add a designated flanged support for the spring as is generally known in the art.

10. Applicant's arguments, see page 10, filed 11/19/2010, with respect to the rejection of claims 22 and 30 under 35 U.S.C. 103(a) have been fully considered but they are not persuasive.

The applicant argues that claims 22 and 30 should be allowed because they recite similar features to allowable claims 17 and 20. The examiner respectfully disagrees. Claims 17 and 20, lines 15-16, require a valve spring between the main valve member and surrounding the expansion element and guide component. Claims 22 and 30 do not require that the valve spring surrounds the expansion element and guide component. It is the combination of a spring surrounding the elements as well as having a guide groove and bayonet connection which renders claims 17-18 and 20 allowable over the cited prior art.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JONATHAN BRADFORD whose telephone number is (571) 270-5199. The examiner can normally be reached on M-Th from 7-5:30.

Art Unit: 3744

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Cheryl Tyler, can be reached on (571) 272-4834. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/J. B./
Examiner, Art Unit 3744
1/3/2011

/Cheryl J. Tyler/
Supervisory Patent Examiner, Art
Unit 3744